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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/735,750

12/16/2003

Akihiko Nakazawa

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EXAMINER

LAMBELET, LAWRENCE EMILE

ART UNIT

PAPER NUMBER

1732

SHORTENED STATUTORY PERIOD OF RESPONSE	MAIL DATE	DELIVERY MODE
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3 MONTHS

01/18/2007

PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

Office Action Summary

Application No.

10/735,750

Applicant(s)

NAKAZAWA ET AL.

Examiner

Lawrence Lambelet

Art Unit

1732

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 16 December 2003.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-16 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-16 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date _____
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: _____

DETAILED ACTION

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1 and 3 are rejected under 35 U.S.C. 103(a) as being unpatentable over Molaire et al (U.S. Patent 5,733,695), and further in view of Toki et al (U.S. Patent 5,504,185).

Molaire et al, hereinafter "Molaire", discloses an electrophotographic endless belt reading on claim 1. Molaire teaches a multi-active electrophotographic element having a diphenylsulfone ingredient and used in the configuration of an endless belt. See lines 34-65 in column 2 and 20-29 in column 5.

Molaire does not teach melt-extruding a thermoplastic resin from a circular die, as required by claim 1. Molaire further does not teach a belt thickness of 40-300 μm , as required by claim 3.

Toki et al, hereinafter "Toki", teaches melt-extruding a polyamide from a cylindrical die. See lines 60-68 in column 3 and 1-6 in column 4. Toki further teaches a film thickness of 3-3000 μm . See lines 12-15 in column 4.

Molaire and Toki are combinable because they are concerned with a similar technical field, namely, polymer extrusions. One of ordinary skill in the art at the time of

Art Unit: 1732

the invention would have found it obvious to include the cylindrical die extrusion taught by Toki in the endless belt method of Molaire. The motivation would have been to avoid a seam at the joined ends of a belt by extruding at an appropriate diameter, said seamless construction representing an avoidance of an implied fabrication step in addition to providing a smooth transition.

Claims 4-8 and 14 are rejected under 35 U.S.C. 103(a) as being unpatentable over Molaire in view of Toki as applied to claims 1 and 3 above, and further in view of Mulcahy (U.S. Patent 4,243,363).

Molaire/Toki teaches the method of claims 1 and 3, as discussed above.

Molaire /Toki does not teach an external diameter between 50-400% of the die, as required by claim 6, or 100-400%, as required by claim 7, or 105-400%, as required by claim 8.

Mulcahy teaches a diameter of a blown-film extruded tube between 200-300% of the orifice diameter. See lines 4-8 in column 3.

Molaire/Toki does not teach a belt thickness less than $\frac{1}{3}$ of the die slit width, as required by claim 4, or less than $\frac{1}{5}$ of the die slit width, as required by claim 5.

Mulcahy teaches control over the diameter of the blown tube by controlling the internal pressure of the air and the draw rate of the nip rollers. See lines 22-29 in column 3. If the diameter can be controlled and the orifice is fixed, it would have been obvious to one of ordinary skill that the thickness of the film would be optimizable. It

Art Unit: 1732

has been held that discovering an optimum value of a result effective variable involves only routine skill in the art. *In re Boesch*, 617 USPQ 215 (CCPA 1980).

Molaire/Toki does not teach expanding the diameter by blowing gas inside a cylindrical tube of film, as required by claim 14.

Mulcahy teaches stretching and expanding a molten tube of extruded plastic by action of air pressure. See lines 9-10 in column 1.

Molaire/Toki and Mulcahy are combinable because they are concerned with a similar technical field, namely, bubble-stretch orientation of films. One of ordinary skill in the art at the time of the invention would have found it obvious to include the diameter and gauge controls taught by Mulcahy in the endless belt method of Molaire/Toki. The motivation to do so would have been to stabilize belt even-ness. See lines 55-68 in column 1 of Mulcahy.

Claims 2 and 9-13 are rejected under 35 U.S.C. 103(a) as being unpatentable over Molaire in view of Toki as applied to claims 1 and 3 above, and further in view of Sypula et al (U.S. Patent 5,525,446).

Molaire/Toki teaches the method of claims 1 and 3, as discussed above.

Molaire/Toki does not teach a polyethersulfone structure (formula 3) for the resin ingredient, as required by claim 2.

Sypula et al, hereinafter "Sypula", teaches such a polyethersulfone ingredient at line 56 in column 5.

Art Unit: 1732

Molaire/Toki does not teach a resistance of 1 to $10^{14} \Omega$, as required by claim 9, or surface and thickness direction resistances ≤ 100 times a minimum, as required by claims 10 and 11.

Sypula teaches a resistivity near $10^{12} \Omega\text{-cm}$. See lines 19-23 in column 6. Sypula further teaches volume resistivity between 10^{10} to $10^{12} \Omega\text{-cm}$ (the minimum being 10^{10}). See lines 4-10 in column 7.

Molaire/Toki does not explicitly teach making an intermediate transfer belt, as required by claim 12, or a transfer material carrying belt (having essentially the same properties), as required by claim 13.

Sypula teaches producing an intermediate transfer member. See the Abstract.

Molaire/Toki and Sypula are combinable because they are concerned with a similar technical field, namely, electrophotographic transfer members. One of ordinary skill in the art at the time of the invention would have found it obvious to include the resistance features as taught by Sypula in the endless belt method of Molaire/Toki. The motivation to do so would have been to access the proper electrical properties for charge dissipation necessary for toner image transfer. See lines 42-45 in column 2 of Sypula.

Claims 15-16 are rejected under 35 U.S.C. 103(a) as being unpatentable over Molaire in view of Toki as applied to claims 1 and 3 above, and further in view of Underwood et al (U.S. Patent 3,151,989).

Molaire/Toki teaches the method of claims 1 and 3, as discussed above.

Art Unit: 1732

Molaire/Toki does not teach a breaking extension of $\geq 2\%$, as required by claim 15, or a tensile strength of ≥ 40 Mpa, as required by claim 16.

Underwood et al, hereinafter "Underwood", teaches an elongation at break of 26-215%, and a tensile strength of 5738-7609 psi (39.6-52.5 Mpa). See Table I of Example I.

Molaire/Toki and Underwood are combinable because they are concerned with a similar technical field, namely, blown films. One of ordinary skill in the art at the time of the invention would have found it obvious to include the strength metrics as taught by Underwood in the endless belt method of Molaire/Toki. The motivation to do so would have been to safeguard tube breaks in the blowing process. See lines 1-6 in column 4 of Toki.

Conclusion

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. The following documents are cited to further show the state of the art with regard to endless transfer belts:

U.S. Patent 6,470,165 to Kobayashi (not prior art)


JP Patent 2000-275980 to Shimojo et al (not prior art)

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Lawrence Lambelet whose telephone number is 571-272-1713. The examiner can normally be reached on 8 am-4:30 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Christina Johnson can be reached on 571-272-1176. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

LEL
1/9/2007


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1/10/07